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No. 99-8508

Supreme Court, U.S.
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IN THE

SUPREME COURT OF THE UNITED STATES

DANNY LEE KYLLO,

Petitioner,

— v.—

UNITED STATES OF AMERICA,

Respondent.

ON WRIT OF *CERTIORARI* TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

BRIEF *AMICUS CURIAE* OF THE NATIONAL ASSOCIATION OF CRIMINAL DEFENSE LAWYERS AND THE AMERICAN CIVIL LIBERTIES UNION, IN SUPPORT OF PETITIONER

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INTEREST OF *AMICI*[1]

The National Association of Criminal Defense Lawyers (NACDL) is a nonprofit corporation composed of more than 10,000 attorneys and 28,000 affiliate members in 50 states. The American Civil Liberties Union (ACLU) is a nationwide, nonprofit, nonpartisan organization with nearly 300,000 members. *Amici* are dedicated to ensuring justice and due process for persons accused of crime, promoting the proper and fair administration of justice, and preserving the principles of liberty and equality embodied in the Bill of Rights.

STATEMENT OF THE CASE

Based on information he had acquired, Agent William Elliott ("Elliott") of the United States Bureau of Land Management, came to suspect that petitioner Danny Lee Kyllo was involved in a conspiracy to grow and distribute marijuana. Elliott enlisted Oregon National Guard Sergeant Daniel Haas ("Haas") to conduct surveillance of the triplex in which Kyllo resided. At 3:20 a.m. one morning in mid-January of 1992, Haas sat in a car parked on the street near the Kyllo residence with a type of thermal imager known as an "Agema Thermovision 210." The device can detect heat that originates in and emanates from the surface of an object. It can also detect heat that originates in the interior of an object, is transmitted to the outer surface of the object, and radiates from that outer surface. It translates the invisible infrared radiation that it detects, displaying the results in a viewfinder so that the

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1. Letters of consent to the filing of this brief have been lodged with the Clerk of the Court pursuant to Rule 37.3. Pursuant to Rule 37.6, counsel for *amici* states that no counsel for a party authored this brief in whole or in part and no person, other than *amici*, its members or its counsel made a monetary contribution to the preparation or submission of this brief.

human eye can assess the level of heat coming from the surface of the object. The greater the heat radiating from an object, the lighter the area surrounding an object appears in the viewfinder. Sergeant Haas aimed the thermal imager at the triplex in which Kyllo resided. He discerned a high level of heat loss from specific areas of the Kyllo home--the roof above the garage and one particular wall of the dwelling. He also ascertained that Kyllo's residence was emitting considerably more thermal energy than the other two units in the triplex.

Agent Elliott believed that the high level of heat emissions from Kyllo's home were indicative of the use of high intensity lights used to grow marijuana. He prepared an affidavit in support of a warrant to search the Kyllo home, including in that affidavit the results of the thermal imaging scan. After a magistrate issued a search warrant, Elliott entered the Kyllo home and found growing marijuana plants.

Kyllo was indicted for manufacturing marijuana. After the federal district court denied his motion to suppress the contraband seized from his home, he entered a conditional guilty plea and was sentenced to a 63-month prison term. Kyllo then appealed the denial of his suppression motion. A panel of the Court of Appeals vacated his conviction and remanded the case. *United States v. Kyllo*, 37 F.3d 526 (9th Cir. 1994)(*Kyllo I*). The district judge then conducted an evidentiary hearing, and again denied the motion to suppress. The judge also resentenced the petitioner to one month of imprisonment, followed by a period of supervised release.

Kyllo once again appealed, and, by a 2 to 1 vote, the Court of Appeals reversed and remanded the case to the district court. The Court of Appeals held that the warrantless thermal imaging by Sergeant Haas was an unreasonable "search" and, consequently, that the information acquired by

the thermal imaging could not be considered in evaluating the validity of the warrant to search the Kyllo residence. *United States v. Kyllo*, 140 F.3d 1249 (9th Cir. 1998)(*Kyllo II*). The government petitioned for rehearing. After the author of the opinion in *Kyllo II* resigned and another judge took his place, the reconfigured panel granted the petition for rehearing. Without oral argument, the panel withdrew the opinion in *Kyllo II* and issued another opinion holding, by a 2 to 1 vote, that the use of the thermal imager to detect heat emissions from petitioner's home "did not constitute a search under contemporary Fourth Amendment standards," and, therefore, that the Fourth Amendment did not regulate the use of that device. *United States v. Kyllo*, 190 F.3d 1041, 1047 (9th Cir. 1999)(*Kyllo III*). A petition for rehearing with suggestion for rehearing *en banc* was denied.

Kyllo petitioned this Court for a writ of *certiorari* to the United States Court of Appeals for the Ninth Circuit. On September 26, 2000, this Court granted the writ.

SUMMARY OF ARGUMENT

Official conduct is a Fourth Amendment "search" when it violates a "reasonable expectation of privacy"--that is, when an individual exhibits an actual, subjective expectation of privacy and society is prepared to recognize that expectation as reasonable. Individuals exhibit actual expectations of privacy in activities conducted inside private homes. The heat-producing character of these activities is not knowingly exposed to those outside the homes because occupants do not know that their conduct produces thermal radiation that can be detected on the outer surface of the home by a thermal imager. Moreover, members of the public do not possess or use thermal imagers. In addition, individuals who retreat behind the walls of homes have taken adequate, normal precautions

to protect their privacy. They need not take extraordinary steps to manifest subjective expectations that in-home activities will remain private.

Society is prepared to recognize these subjective privacy expectations as reasonable. There is a *strong presumption* that society will acknowledge the reasonableness of actual expectations of privacy in *homes*. To overcome that presumption, the government must furnish a compelling reason to deny home privacy.

The government can carry its burden by showing "knowing exposure" by a claimant or a "failure to take adequate precautions." "Knowing exposure" can render actual privacy expectations unreasonable only if the public could gain access to information from a lawful vantage point using unaided senses, if public presence in the area affording access is routine, *and* if the public regularly engages in the behavior affording access. The information gained by thermal imaging cannot be acquired by unaided senses, and the public does not regularly use thermal imagers to discern in-home activities. A "failure to take adequate precautions" can render actual privacy expectations unreasonable only if an individual fails to take normal precautions to protect privacy. A person who conducts his life behind the walls of a home takes normal precautions. He need not take special steps to conceal the invisible, infrared radiation that thermal imagers detect.

The government can also rebut the strong presumption in favor of home privacy by showing that its conduct could not reveal any significant information that is entitled to constitutional protection. The presumption is controlling, however, if government conduct could disclose *any* legitimate information--even a single fact about the interior of premises. In that case, society will honor an actual expectation of

privacy. Thermal imagers can and do reveal legitimate information about the private occurrences within a home. There is no constitutional or doctrinal foundation for the misguided view that thermal imaging is not a search because it does not reveal sufficiently "detailed" or "intimate" information.

Because both doctrinal requirements are satisfied, thermal imaging violates reasonable expectations of home privacy and constitutes a Fourth Amendment "search." The use of a thermal imager is unreasonable unless based on a search warrant supported by probable cause.

This case presents an opportunity to explain the relationship between technology and the Fourth Amendment and to provide constitutional guidance for future cases involving tools that enhance human perception. Governmental exploitation of a technological advance should be brought within Fourth Amendment control when it imperils the privacy interests intended to be preserved by the Framers. The privacy sheltered by the Fourth Amendment is primarily an entitlement to maintain the confidentiality of information about our lives. Technology clearly threatens that core value when it enables the government to learn facts that could only have been learned through physical entry at the time the Bill of Rights was adopted.

At that time, physical intrusions were the primary means of violating confidentiality interests. Today, technology enables the authorities to breach secrecy without physical intrusion. At a minimum, a technological advance that is an effective substitute for physical intrusion and poses the same threats to privacy should be governed by the Fourth Amendment. A new device must be constrained by the Constitution whenever it enables officials to learn any

confidential information that previously could have been learned only by means of physical intrusion.

Thermal imaging is an effective surrogate for physical entry because it enables the government to learn legitimate, confidential information about the conduct of home occupants. In an earlier era, that information could only have been learned by physical intrusion. Consequently, before employing thermal imagers to acquire information about in-home activities, government officials must comply with the probable cause and search warrant requirements imposed by the Fourth Amendment.

ARGUMENT

I. BECAUSE THERMAL IMAGING VIOLATES REASONABLE EXPECTATIONS OF PRIVACY IN HOMES, IT CLEARLY CONSTITUTES A FOURTH AMENDMENT "SEARCH"

The Fourth Amendment regulates governmental "searches and seizures." The straightforward issue in this case is whether the use of a thermal imager to detect heat-producing activities occurring inside a private home is a "search" under the Fourth Amendment. Under the controlling doctrine, thermal imaging clearly qualifies as a search.

A. The Government Searches When It Violates A Reasonable Expectation Of Privacy

Modern Fourth Amendment doctrine concerning when government conduct constitutes a "search"–threshold doctrine–began with *Katz v. United States*, 389 U.S. 347 (1967). The *Katz* Court rejected the requirement of "physical intrusion" into a "constitutionally protected area," recognizing that the promise of "security" against "unreasonable searches"

can be jeopardized without the "penetration" of enclosed spaces. *Id.* at 352-53. Electronic eavesdropping on a conversation in a telephone booth without physical intrusion "constituted a 'search'" because it "violated the privacy upon which [Mr. Katz had] justifiably relied." *Id.* at 353.

The Court has subsequently adopted the formulation proposed in Justice Harlan's *Katz* concurrence. *See, e.g., Bond v. United States*, 529 U.S. ___, 120 S.Ct. 1462, 1465 (2000); *California v. Greenwood*, 486 U.S. 35, 39 (1988); *Smith v. Maryland*, 442 U.S. 735, 739-40 (1979). Today, "application of the Fourth Amendment depends on whether the person invoking its protection can claim a 'justifiable,' a 'reasonable,' or a 'legitimate expectation of privacy' that has been invaded by government action." *Smith v. Maryland*, 442 U.S. at 740. That determination depends on "two discrete questions"–"whether the individual, by his conduct has 'exhibited an actual (subjective) expectation of privacy'" and whether that "subjective expectation . . . is 'one that society is prepared to recognize as "reasonable."'" *Id.*[2]

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2. In form, the *Katz* test is conjunctive. For official conduct to qualify as a search, an individual must exhibit an actual expectation of privacy *and* society must be prepared to recognize that expectation as reasonable. In substance, however, the actual expectation requirement has played no role in threshold analyses. It has not dictated the scope of Fourth Amendment coverage in any of the Court's decisions. In the sole opinion to analyze a claimant's actual expectation of privacy, the Court first expressed "doubt" that the claimant had such an expectation, then reasoned that "even if [he] did harbor [a] subjective expectation" of privacy, that expectation was not one that society was prepared to recognize as reasonable. *See Smith v. Maryland*, 442 U.S. at 743-44. In every other threshold case, the Court has either ignored the first inquiry, turning immediately to the second question, *see, e.g., Hudson v. Palmer*, 468 U.S. 517, 525 (1984); *United States v. Knotts*, 460 U.S. 276, 283 (1983), or has paid but cursory lip service to the first requirement, quickly assuming that the claimant had a subjective privacy expectation. *See, e.g., Bond*, 120 S.Ct.

(continued...)

B. Home Occupants Exhibit Actual, Subjective Expectations Of Privacy In The Heat-Producing Conduct Detected By Thermal Imaging

The Court of Appeals concluded that the petitioner "demonstrated no subjective expectation of privacy" in the "waste heat [emissions] . . . radiating from the outside surface of [his] home" because he "made no attempt to conceal these emissions." *United States v. Kyllo*, 190 F.3d 1041, 1046 (9th Cir. 1999)(*Kyllo III*). This conclusion mischaracterizes the issue, is inconsistent with the rationale for the actual expectation requirement, and reflects a profound misunderstanding of the law.[3]

A thermal imager does not simply inform the authorities that heat is radiating from the outer surface of a home. It also furnishes a basis for inferring that home occupants are engaged in heat-generating conduct inside the home. As this case illustrates, its very usefulness lies in the latter inference. Consequently, the issue is not whether an

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2. (...continued)
at 1464; *Greenwood*, 486 U.S. at 39-40 ; *California v. Ciraolo*, 476 U.S. 207, 211 (1986). As will become clear below, the instant case does not provide an occasion for the Court to depart from this established pattern.

3. Shortly after *Katz*, Justice Harlan, author of the "actual [subjective] expectation" of privacy test, decided that "[t]he analysis must . . . transcend the search for subjective expectations." *United States v. White*, 401 U.S. 745, 786 (1971)(Harlan, J., dissenting). A majority of the Court later observed that the "problems inherent in [a subjective expectation] standard are self-evident." *Hudson v. Palmer*, 468 U.S. at 525 n.7. These problems explain why the "Court has always emphasized the second of the[] two requirements," *id.*, and has *never* denied Fourth Amendment protection on the ground that a claimant lacked a subjective privacy expectation. The Court of Appeals' erroneous conclusion that petitioner failed to exhibit such an expectation illustrates one of the perils posed by the actual expectation requirement.

occupant has a privacy expectation in heat emitted from a home's outer surface. The question is whether he has an expectation of privacy in the information that can be revealed by thermal imaging–that heat-producing activities are occurring inside, and in particular parts of, a home. The answer to that question is clear. Occupants do have actual expectations of privacy in concealed, in-home activities.

The actual expectation of privacy requirement rests on relatively simple logic. If a person shields information or activities from others, making efforts to maintain confidentiality, it makes sense to conclude that he expects privacy. On the other hand, if his words or deeds expose information or activities to others–effectively "publicizing" those matters–it is both logical and fair to conclude that he has no interest in or expectation of privacy. The conduct belies a concern for confidentiality and is inconsistent with a subjective privacy expectation. The government has not "violated" or "invaded" privacy. The individual has effectively relinquished constitutionally protected interests, and the authorities have merely taken advantage of his willingness to do so.

The doctrine is in accord with this logic. A person exhibits a constitutionally cognizable, actual expectation of privacy whenever "'he seeks to preserve [something] as private.'" *Smith v. Maryland*, 442 U.S. at 740 (quoting *Katz*, 389 U.S. at 351). He demonstrates that he does not have a subjective expectation of privacy only when he either "knowingly exposes [something] to the public," *Katz*, 389 U.S. at 351, or engages in acts that he knows will reveal information to another. *See Smith v. Maryland*, 442 U.S. at 743-44.

By retreating inside a home, an individual clearly "seeks to preserve" the privacy of his activities and thereby manifests an actual expectation of privacy in those activities.

He neither *knowingly* exposes nor *willingly* reveals what he is doing to anyone outside the home. The fact that thermal imaging devices can learn about those in-home activities by detecting the otherwise invisible radiation they produce does not alter the analysis. Occupants are not generally aware that in-home conduct produces infrared radiation, that such radiation travels through walls, or that thermal imagers can detect that radiation. In addition, because those outside cannot see, feel, or otherwise perceive the emitted radiation, the fact that heat-producing activity is occurring inside is not, in fact, "exposed" to anyone.[4] Consequently, it is patently illogical to conclude that homedwellers knowingly expose in-home activities, their heat-generating nature, or heat emissions from those activities to the public. Moreover, a declaration that occupants do not have actual expectations of privacy against thermal imaging that reveals information about *indoor activities that are concealed from public view* cannot be reconciled with any of the Court's threshold decisions.[5]

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4. Thermal imagers, the only means of detecting the invisible, infrared radiation, are in exceedingly limited use. If the government were to announce that it was routinely employing thermal imagers in neighborhoods from the air and ground, actual privacy expectations in in-home activities could disappear. In such a case, however, a "normative inquiry would be proper." *Smith v. Maryland*, 442 U.S. at 741 n.5. "[I]nfluences alien to well-recognized Fourth Amendment freedoms" would not be allowed to defeat those freedoms. *Id.*

5. Even in situations involving the *actual exposure of outdoor activities to unaided public view*, the Court has not denied Fourth Amendment coverage on the ground that claimants failed to exhibit subjective expectations of privacy. In *United States v. Knotts*, the defendant's travels along public roads were all visible to the unenhanced senses of the public, yet the Court did not rest its decision on the absence of a subjective privacy expectation. In *California v. Ciraolo*, the Court "recognized that . . . the occupant [of a home] had a subjective expectation of privacy" in his curtilage, *Florida v. Riley*, 488 U.S. 445, 449 (1989), (continued...)

The Court of Appeals' conclusion that petitioner lacked a subjective expectation of privacy because he "took no affirmative action to" and "made no attempt to conceal" heat emissions escaping from his home, *Kyllo III*, 190 F.3d at 1046, is erroneous. A person "seeks to preserve [something] as private," *Katz*, 389 U.S. at 351, and exhibits a constitutionally protectible actual expectation of privacy if he takes *ordinary* measures to shield it from public perception. *See Riley*, 488 U.S. at 454 (O'Connor, J., concurring in the judgment); *Ciraolo*, 476 U.S. at 211. Home occupants take adequate steps to maintain confidentiality by conducting their activities behind opaque walls and covered windows. They do not have to take extraordinary steps to foreclose *all* possible means of public or official access.[6] They need not build fortresses to demonstrate expectations of privacy against physical intrusion. Similarly, they need not seal their homes to block the escape of heat to exhibit expectations of privacy against technological intrusion. A requirement of extraordinary precautions to contain heat emissions would be completely discordant with

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5. (...continued)
even though it was exposed to the flying public. And in *California v. Greenwood*, the Court acknowledged the possibility that the respondents actually did expect that the contents of their discarded garbage would remain private despite the fact that they had exposed those contents to the public and conveyed them to a trash collector. The sole case in which the Court concluded that a claimant "in all probability" lacked an actual expectation of privacy involved a *knowing choice* to convey the unprotected information to a third party. *See Smith v. Maryland*, 442 U.S. at 742. In thermal imaging cases, there is no choice to disclose anything to anyone.

6. To do so would be to put the burden of protecting liberty on citizens. To enjoy constitutionally guaranteed rights we would have to alter normal living patterns in ways that could be burdensome, inconvenient, and costly.

the reasoning and holdings of the Court's threshold decisions.[7]

In sum, both the logic that underlies the actual expectation of privacy demand and the Court's precedents unequivocally dictate the conclusion that petitioner manifested an actual expectation of privacy against thermal imaging of his home.

C. Society Is Prepared To Recognize The Reasonableness Of Expectations Of Privacy In In-Home Conduct That Generates Invisible Heat Emissions

As in past cases, the outcome of this case hinges on the second *Katz* inquiry. The question is whether society is prepared to recognize that it is reasonable for home occupants to expect that the fact that they are engaged in indoor heat-generating activities will not be detected by thermal imaging

7. In *Katz*, for example, the claimant had a protected privacy interest because he shut the door of the telephone booth. He did not have to take steps to conceal "waste voice emissions" that could be detected by an electronic eavesdropping device on the outer surface. In *United States v. Karo*, 468 U.S. 705 (1984), the claimant manifested an actual privacy expectation by taking a can of chemicals out of view inside his home. He did not have to take special measures to prevent an electronic signal from the beeper attached to the can from reaching the government's receiver. In *California v. Greenwood*, the mere concealment of true "waste" inside opaque bags discarded at the curb exhibited a subjective expectation of privacy. The claimant did not have to resort to a more secure means of disposal to guard against snoops, scavengers, animals, or the authorities. And in *Bond v. United States*, the claimant evinced a subjective expectation of privacy by enclosing contraband within an opaque, soft-sided bag. He was not required to purchase hard-sided luggage to conceal the contents from exploratory fingers.

devices.[8] The Court has identified a number of criteria that are useful in deciding whether it is rational and appropriate for society to recognize a particular expectation of privacy. The relevant criteria provide powerful support for the conclusion that society must accept the reasonableness of a home occupant's subjective privacy expectations with regard to thermal imaging.

1. There Is A Strong Presumption That Society Will Recognize The Reasonableness Of Expectations Of Privacy Concerning Activities Within A Home

One extremely relevant factor is whether a privacy expectation involves activities within a *home*. The protection of privacy in our homes was foremost among the purposes of the Fourth Amendment's drafters. *See Payton v. New York*, 445 U.S. 573, 585 (1980). Privacy interests in dwellings are entitled to "special protection" because the home is "the center of the private lives or our people." *Minnesota v. Carter*, 525 U.S. 83, 99 (1998)(Kennedy, J., concurring). "[A] home is a place in which a subjective expectation of privacy *virtually always* will be legitimate." *Ciraolo*, 476 U.S. at 220 (Powell, J., dissenting)(emphasis added). Because the "assurance of personal security in one's home" is a critical "part of our constitutional tradition," *Minnesota v. Carter*, 525 U.S. at 100 (Kennedy, J., concurring), official conduct that jeopardizes

8. The phrasing of the second *Katz* inquiry is somewhat inapt. The object is not to ascertain the opinions actually held by members of society. Instead, the aim is to determine whether it makes sense to accept a claim that the government has infringed upon an interest entitled to constitutional protection. Put otherwise, the inquiry is designed to assess whether it is reasonable to conclude that a particular governmental action threatens "the personal and societal values" underlying Fourth Amendment restrictions upon "searches." *Oliver v. United States*, 466 U.S. 170, 182-83 (1984).

privacy interests inside a home triggers a powerful presumption of Fourth Amendment control.[9]

In this case, the officer used a thermal imager to acquire otherwise inaccessible information about activities taking place inside a private home. To rebut the presumption that society is prepared to honor the subjective expectations of privacy regarding those activities, the government has a very heavy burden. It must provide a compelling reason for denying the protection "virtually always" granted to in-home conduct. The government has not carried that burden.[10]

2. A Home Occupant Does Not "Knowingly Expose" Indoor Activities To The Public Or "Fail To Take Adequate Precautions" To Preserve The Privacy Of Those Activities Simply Because A Thermal Imager Can Detect Heat Emissions

If a person *knowingly exposes* matters to the public, *see Ciraolo*, 476 U.S. at 213; *Knotts*, 460 U.S. at 283, or *fails to*

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9. *See Karo*, 468 U.S. at 714 ("At the risk of belaboring the obvious, private residences are places in which the individual normally expects privacy . . . and that expectation is one that society is prepared to recognize as justifiable.")

10. Only two of the Court's threshold cases have involved conduct inside private homes. In *Karo*, the Court started with the premise that home privacy is presumptively protected, then held that monitoring of an electronic transmitter to learn that an object remained inside a home "present[ed] far too serious a threat to privacy interests in the home to escape . . . Fourth Amendment oversight." *Karo*, 468 U.S. at 716. In *Smith v. Maryland*, the Court concluded that society would not recognize the reasonableness of petitioner's expectation of privacy in the numbers he dialed on his home phone *only* because he had voluntarily chosen to convey those numbers to the telephone company, which furnished them to the authorities. *Smith v. Maryland*, 442 U.S. at 742.

take adequate precautions to shield those matters from public access, *see Rawlings v. Kentucky*, 448 U.S. 98, 105 (1980), a subjective expectation that they will remain private is unreasonable. These criteria are logically related. The action of exposing and the failure to protect are germane because both betray a genuine lack of concern for maintaining confidentiality and thereby contradict the legitimacy of a claim that the government has *deprived* the individual of a protected privacy interest.[11]

A person does not "knowingly expose" a matter simply because some member of the public could gain access to it by some means. If that were the case, virtually everything about our lives would be knowingly exposed. Instead, a privacy expectation can be deemed unreasonable on this ground *only* if the public can gain access from a lawful vantage point by means of unaided human senses. *See Ciraolo*, 476 U.S. at 213-14; *Knotts*, 460 U.S. at 282. In addition, public presence in the area affording access must be sufficiently "routine." *See Riley*, 488 U.S. at 450-51; *Ciraolo*, 476 U.S. at 213-14. Finally, members of the public must in fact engage in the conduct that affords access with regularity. *See Bond*, 120 S.Ct. at 1465. If the public would have to violate the law or use uncommon technological devices to gain access or if public access to the matter claimed to have been exposed is rare or unlikely, there is no reason to conclude that the individual has elected to jeopardize her interest in secrecy and to blame her for knowing public exposure.[12]

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11. The reasoning underlying these criteria of "reasonableness" is similar to the logic underlying the conclusion that exposure or a failure to protect manifests an insufficient subjective privacy expectation.

12. The Court's decisions that have held expectations of privacy unreasonable on the ground of "knowing exposure" support these

(continued...)

Similarly, the failure to guard against every possible means of access to one's life will not support a finding of inadequate precautions. Homeowners need not put iron bars on their doors and windows because an intruder could break in or erect barricades around their yards because a trespasser might peer in a window. Individuals need not forego public telephones because electronic eavesdropping equipment is available. *See Katz v. United States*, 389 U.S. 347 (1967). And travelers need not lock briefcases or purchase hard luggage because curious strangers might decide to open unlocked or manipulate soft-sided repositories. *See Bond v. United States*, 120 S.Ct. 1462 (2000). Ordinary precautions demonstrate

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12. (...continued)
conclusions. All involved situations where officers assumed lawful vantage points routinely occupied by the public. In all, the officers either used unaided senses or used technological means that revealed nothing more than they could have learned by unaided senses. Finally, in all, the authorities did not engage in conduct that would be uncommon or extraordinary for a member of the public. In *Knotts*, a beeper told officers nothing that a member of the public standing along a public roadway could not have learned with her eyes. In *Ciraolo* and *Riley*, officers in navigable airspace where public presence was deemed sufficiently routine looked down with naked eyes and saw exposed outdoor activities. And in *Greenwood*, while in a public place, an officer used ordinary human senses to do no more than various members of the public did with some frequency--he rummaged through trash voluntarily discarded at the curb. Admittedly, in *Dow Chemical Co. v. United States*, 476 U.S. 227 (1986), the Court relied on knowing exposure when the authorities used an aerial mapping camera to detect what unaided eyes could not have seen from a lawful vantage point. That decision, however, provides no support for a "knowing exposure" finding in thermal imaging cases. In *Dow*, the Court observed that the camera used was not a "unique sensory device," but, instead, was commonly used for mapmaking, that the enhancement of senses was relatively modest, and, most important, that the area involved was "commercial curtilage," a domain that is much closer to "open fields" than to "residential curtilage." *Id.* at 238-39. *Dow* clearly involved special circumstances that are not present when a thermal imager is used to learn about private conduct inside a dwelling.

adequate interests in preserving privacy. *See Riley*, 488 U.S. at 454 (O'Connor, J., concurring in the judgment); *Ciraolo*, 476 U.S. at 211. It would be irrational, costly, and destructive of liberty if the failure to preclude every conceivable means of learning about our lives were interpreted as an insufficient interest in privacy and were relied on to deny Fourth Amendment protection.

Properly understood, the "knowing exposure" and "inadequate precautions" criteria have no application to thermal imaging of homes. While officers typically do employ thermal imagers from lawful vantage points–either navigable airspace or public streets–they do not use unaided senses or technology that merely enables them to do more efficiently what they could do with their senses. Instead, just as in *Karo*, utilizing a sophisticated, uncommon electronic tool to sense what no human being could otherwise perceive, they acquire information about the concealed happenings inside dwellings. Moreover, the public does not and is not likely to use thermal imagers with any regularity. Ordinary citizens *never* use thermal imagers to learn whether heat-generating activities are occurring in private homes. To demand extraordinary precautions to prevent the escape of invisible, infrared emissions would be unprecedented, unjustifiable, and exceedingly harmful to security in our homes. Just as we need not soundproof our homes to guard private conversations against electronic eavesdropping, we do not have to insulate our homes to shield private activities from thermal imaging. Normal safeguards against public access entitle occupants to Fourth Amendment protection.

3. The Use Of A Thermal Imager To Detect Heat Emissions Produced By Activities Inside A Private Home Reveals Significant Confidential Information In Which Occupants Have Legitimate Privacy Expectations

Another relevant factor is whether the challenged official conduct *has enabled* or *could enable* the authorities to learn any information about a person's life that is entitled to constitutional protection. Official actions that can disclose nothing at all, *see United States v. Jacobsen*, 466 U.S. 109, 119-20 (1984); *Karo*, 468 U.S. at 712, or only facts that are wholly insignificant, *see Jacobsen*, 466 U.S. at 119-20; *United States v. Place*, 462 U.S. 696, 707 (1983), cannot violate privacy expectations that society is prepared to recognize. Moreover, when the lone significant fact that the authorities might uncover is that an exposed substance is contraband or that contraband is inside a publicly-situated container, their conduct does not jeopardize a privacy interest that society is prepared to honor. *See Jacobsen*, 466 U.S. at 123-24; *Place*, 462 U.S. at 707.[13] This "insufficient information" criterion[14]

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13. In *Jacobsen*, 466 U.S. at 123, the Court explained that one cannot have a "legitimate privacy interest" in the fact that a substance is contraband narcotics because the possession of contraband narcotics is "illegitimate." *See also Place*, 462 U.S. at 707 (analogous holding for dog sniff of luggage located in public place). When the Fourth Amendment was framed, there were no investigative means able to uncover *only* such "illegitimate" information. Without historical support or extended explanation, the Court has inferred that the Framers did not intend to protect privacy interests in the mere fact that one has an "illegitimate" item. While that narrow premise is surely debatable and may require reexamination in a future case, it has positively no force in thermal imaging contexts. A large number of legitimate in-home activities can generate the infrared radiation that is perceived by thermal imagers. There is nothing inherently illegitimate about the fact that heat-producing conduct is occurring in a home or particular areas of a home. Consequently, the information revealed by thermal imaging of a home is critically different from the information disclosed by a chemical field test or a dog sniff of a piece of luggage sitting in a public place.

14. "Insufficient information" is a shorthand used here to refer to all three situations in which the Court has deemed the threat to the (continued...)

rests on the recognition that the primary object of Fourth Amendment protection is an entitlement to keep our lives confidential. If officials can learn nothing, nothing significant, or nothing other than the fact that a substance is "illegitimate" contraband, their actions do not threaten any cognizable or deserving interest in secrecy.

The "insufficient information" criterion cannot defeat a Fourth Amendment claim when official conduct could reveal *any* legitimate information. The applicability of the Fourth Amendment does not turn on the extent of the infringement.[15] Consequently, the only investigative methods deemed to pose no threat to reasonable expectations of privacy are those with absolutely no capacity to uncover any amount of legitimate information that a person might wish to preserve as secret. State action that can reveal a single "critical fact about the interior of . . . premises" imperils Fourth Amendment interests, *Karo*, 468 U.S. at 715, and triggers the application of that

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14. (...continued)
confidentiality of information inadequate to merit constitutional regulation.

15. Thus, if officers employ an electronic transmitter to learn the modest, mundane fact that a can of noncontraband chemicals remains inside a residence that they saw it enter, the "insufficient information" criterion does not apply. Society will respect an expectation of privacy in that fact. *See Karo*, 468 U.S. at 715-16. Similarly, if an officer merely lifts a turntable for the seconds it takes to examine a serial number on the bottom, the fact that only a minimal amount could be learned does not justify reliance of the "insufficient information" factor. Society recognizes the legitimacy of the owner's privacy expectation. *See Arizona v. Hicks*, 480 U.S. 321, 325 (1987). Surely the interest in concealing whether and where we are engaged in heat-generating activities in our homes deserves as much protection as the interest in concealing whether innocuous objects are in our homes and the interest in the undersides of our stereo equipment.

guarantee.[16]

Thermal imagers reveal legitimate private information about the activities inside homes. While they may not disclose precise details about the character of in-home activities, they detect whether an extraordinarily high, an average, or an abnormally low amount of heat-generating conduct is occurring inside a dwelling. Moreover, they can more precisely indicate the particular areas of homes where heat-producing conduct is occurring. The information disclosed is both significant and legitimate.[17] Although the privacy violation is not of the most severe variety, it is still a serious, cognizable invasion. Because thermal imaging of a home enables officials to learn "critical fact[s] about the interior of the premises that the Government is extremely interested in knowing," *Karo*, 468 U.S. at 715, it violates a privacy expectation that society is prepared to recognize.

The Court of Appeals held that thermal imaging is not a search because it only detects "waste heat" and does not allow officials to learn detailed or "intimate" information about in-home activities. *Kyllo III*, 190 F.3d at 1046-47. This

16. *See Hicks*, 480 U.S. at 325 ("A search is a search even if it happens to disclose nothing but the bottom of a turntable.").

17. There is good reason that no opinion suggests that the radiation detected by thermal imagers can only be generated by illegal conduct. Thermal imaging can undoubtedly discern radiation produced by legitimate in-home conduct. A host of legitimate indoor activities--the cultivation of legal plants, use of a sauna, steambath, heat lamps, or fireplaces, and the operation of cooking, baking, clothes-drying, or space-heating appliances, for example--can all generate heat that could be emitted from the outer surface of a dwelling. In addition, the legitimate preference for a particularly warm environment for comfort or health reasons or the choice not to invest in additional insulation for an old dwelling could result in a higher level of radiation from a home or particular areas of a home.

conclusion misconstrues the relevant precedents. The Court's opinions have drawn a bright line between situations involving no information of legitimate significance and those involving a single legitimate fact. If a practice threatens the disclosure of *any* amount or *any* kind of legitimate confidential information, it jeopardizes privacy interests that society is prepared to honor. Detail and intimacy are not essential.[18]

The Court of Appeals' conclusion is a fatally flawed extension of the "insufficient information" factor. First, its underlying premise–that the Constitution only protects interests in the confidentiality of information that satisfies certain quantity and quality standards–is devoid of textual or historical support. Neither the background nor the language of the Fourth Amendment suggests that the Framers meant to protect only specific or intimate information. The demand for detail and intimacy is nothing short of judicial constriction of a fundamental right.[19] Moreover, adoption of these criteria would lead to endless questions regarding the degree of detail and intimacy necessary to qualify for constitutional protection. These questions would have to be resolved without guidance from history or the constitutional text. Principled lines

18. While opinions of this Court have occasionally referred to the fact that "intimate" matters were not threatened or disclosed by government conduct, *see Riley*, 488 U.S. at 452; *Dow Chemical Co.*, 476 U.S. at 238; *Oliver v. United States*, 466 U.S. at 179, none of these cases stands for the radical and unwarranted proposition that information about in-home conduct must satisfy some threshold of intimacy before qualifying for Fourth Amendment protection.

19. "It may be that it is the obnoxious thing in its mildest and least repulsive form; but illegitimate and unconstitutional practices get their first footing . . . by silent approaches and slight deviations from legal modes of procedure. . . . . It is the duty of courts to be watchful for the constitutional rights of the citizen, and against any stealthy encroachments thereon." *Boyd v. United States*, 116 U.S. 616, 635 (1886).

between detail and generality and between intimacy and nonintimacy would be impossible to draw. Moreover, they would be transparent judicial creations without constitutional roots.[20]

In sum, there is no textual, historical, precedential, or logical predicate for the view that the Fourth Amendment protects only detailed, intimate information about our lives. Approval of that view would lead to serious erosion of invaluable constitutional interests.[21]

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20. *Cf. Hicks*, 480 U.S. at 328-29 (refusing to create a category of search known as a "cursory inspection" because of the potential for confusion of police and judges and because "text[] and tradition[]" supported a contrary conclusion). In addition, approval of the "detail" and "intimacy" criteria would constitute a perilous step onto a very slippery slope. *Cf. Florida v. J.L.*, 120 S.Ct. 1375, 1379-80 (2000)(rejecting "firearms exception" to reasonable suspicion requirement in part because other exceptions would necessarily follow); *Richards v. Wisconsin*, 520 U.S. 385, 393-94 (1997)(rejecting categorical exception to the knock and announce rule because it would lead to other exceptions and to evisceration of the rule). If heat emissions produced by in-home conduct are too general and insufficiently intimate to merit protection, then surely sound emissions, odors, and patterns of movement produced by indoor activities could not claim constitutional shelter. The Fourth Amendment would be powerless to regulate technological tools for measuring whether occupants are engaged in acts projecting relatively high or low sound levels, generating relatively strong or weak aromas, or entailing relatively large or small amounts of motion. And if general, nonintimate information about in-home activities can be acquired indiscriminately, the same conclusion would follow for similar information about personal conduct in even less private spheres–e.g., automobiles, curtilage, personal containers, or even our persons. The damage to precious Fourth Amendment freedoms would be swift and severe.

21. To the extent that lower courts have denied Fourth Amendment coverage for thermal imagers because they are "passive" and do not "intrude" into homes or curtilage, but simply receive emanations (continued...)

Petitioner manifested an actual expectation of privacy in his in-home activities. The government has not overcome the powerful presumption that his expectation of privacy in his home was reasonable and legitimate. Because both *Katz* requirements have been met, the thermal imaging of the petitioner's home was a search and must be governed by the Fourth Amendment's probable cause and warrant norms.

II THE GOVERNMENT'S USE OF TECHNOLOGICAL DEVICES THAT IMPERIL PRIVACY INTERESTS PROTECTED AT THE TIME THE FOURTH AMENDMENT WAS ADOPTED MUST BE GOVERNED BY THE CONSTITUTIONAL GUARANTEE AGAINST UNREASONABLE "SEARCHES"

Advances in science and technology dramatically improve the quality of our lives. At the same time, they engender new threats to old liberties. Over seventy years ago,

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21. (...continued)
from activities within the homes, *see, e.g., United States v. Ishmael*, 48 F.3d 850, 856 (5th Cir. 1995); *United States v. Penny-Feeney*, 773 F.Supp. 220, 223, (D. Haw. 1991), their reasoning is equally misguided. A physical intrusion can support a "search" finding in an otherwise close case. *See Ciraolo*, 476 U.S. at 213 (noting that when officers used naked eyes from navigable airspace to see what was visible to the routinely present public they did so "in a physically nonintrusive manner"). Since *Katz*, however, the Court has refused to allow the reach of the Fourth Amendment to turn on the presence or absence of a physical intrusion into a constitutionally protected area. *See, e.g., Bond v. United States*, 120 S.Ct. 1462 (2000)(squeezing outside of soft bag without physically intruding into interior is a search); *United States v. Karo*, 468 U.S. 705 (1984)(use of electronic device to passively receive signal from transmitter without physical intrusion is a search). The conclusion that no search has occurred because the government has not physically intruded, but has passively acquired confidential information, is still "bad physics as well as bad law." *Katz*, 389 U.S. at 362 (Harlan, J., concurring).

Justice Brandeis warned that technological surveillance tools pose enormous dangers to Fourth Amendment rights. *See Olmstead v. United States*, 277 U.S. 438, 474 (1928)(Brandeis, J., dissenting); *see also Goldman v. United States*, 316 U.S. 129, 138-40 (1942)(Murphy, J., dissenting). While initially these admonitions were not persuasive to a majority, *see Olmstead v. United States*, eventually they carried the day. Thirty-three years ago, in the landmark ruling in *Katz v. United States*, 389 U.S. 347 (1967), eight members of this Court recognized that unfettered exploitation of tools made possible by science and technology could destroy constitutional liberties. The Court announced, and has since refined, a doctrine designed to protect Fourth Amendment freedoms against ever more powerful surveillance devices.

In the years since *Katz*, scientific and technological developments have given rise to a number of novel threshold issues. The Court has resolved the questions presented in a case-by-case fashion, declaring that some enhancements of human senses are subject to Fourth Amendment constraints, *see United States v. Karo*, 468 U.S. 705 (1984), while others are not. *See, e.g., Dow Chemical Co. v. United States*, 476 U.S. 227 (1986); *United States v. Knotts*, 460 U.S. 276 (1983). The opinions, however, have not yielded a controlling framework for determining when technology implicates the Fourth Amendment.[22] This case presents an opportunity to clarify the

22. Reflections upon the relationship between technology and the Fourth Amendment have tended to be general, case-specific, or tentative. *See, e.g., Karo*, 468 U.S. at 712 ("It is the exploitation of technological advances that implicates the Fourth Amendment, not their mere existence."); *Knotts*, 460 U.S. at 282 ("Nothing in the Fourth Amendment prohibited the police from augmenting the sensory faculties bestowed upon them at birth with such enhancement as science and technology afforded them in this case."); *see also Dow Chemical Co.*, 476 U.S. at 238-39 (hinting at possible distinctions between "unique sensory device[s]" and (continued...)

relationship between technological advances and Fourth Amendment values.

A. An Exploitation Of Technology That Threatens The Privacy Interests Preserved By The Guarantee Against Unreasonable Searches Must Be Subject To Fourth Amendment Regulation

"Each new claim to Constitutional protection must be considered against a background of Constitutional purposes, as they have been rationally perceived and historically developed." *Poe v. Ullman*, 367 U.S. 497, 544 (1961)(Harlan, J., dissenting). More than a century ago, the Court acknowledged that the concerns underlying the Fourth Amendment extend beyond the "breaking of . . . doors, and the rummaging of . . . drawers" to "*all invasions* on the part of the government . . . *of the sanctity of a man's home and the privacies of life*." *Boyd v. United States*, 116 U.S. at 630 (emphasis added). In the modern era, the Court has confirmed that the primary value furthered by the Bill of Rights promise of security against "searches" is "privacy." *See Horton v. California*, 496 U.S. 128, 133 (1990).

"The purpose of the [Fourth Amendment] . . . is to preserve that degree of respect for the privacy of persons . . . that existed when the provision was adopted." *Minnesota v. Dickerson*, 508 U.S. 366, 380 (1993)(Scalia, J., concurring).

22. (...continued)
"conventional" tools and between "highly sophisticated surveillance equipment" and items "generally available to the public"). In the absence of clear guidance, lower courts have frequently misunderstood when exploitations of technology prompt Fourth Amendment scrutiny and when they fall outside the ambit of that guarantee. Because new developments are likely to raise novel questions with increasing frequency, the need for guidance will only increase.

When confronted with a technological advance, courts must remain "true to the conception of the right to privacy embodied in the Fourth Amendment" and to "the recognition of the Framers that certain enclaves should be free from arbitrary government interference." *Oliver v. United States*, 466 U.S. 170, 178 (1984). Surveillance techniques that do not endanger Fourth Amendment values should not be deemed within its sphere of control simply because they are novel or efficient. On the other hand, new tools that imperil core interests must satisfy Fourth Amendment demands. The dispositive question is whether a technological advance threatens the privacy values held dear by the Framers.

An accurate determination of whether a tool of technology imperils Fourth Amendment values requires an understanding and appreciation of the character of the privacy interests preserved by that guarantee. Threshold decisions have made it clear that the aspect of privacy embodied in that provision is a fundamental entitlement to secrecy–a right to keep information about our lives confidential from the government.[23] The expectations of privacy protected are expectations that officials will not learn matters we make efforts to conceal.

B. Technological Devices Threaten Fourth Amendment Privacy Values When They Enable Officials To Learn Any Confidential Information That Could Have Been Learned Only By Physical Intrusion At The Time That Provision Was Adopted

At the time the Bill of Rights was adopted, physical

23. *See* James J. Tomkovicz, *Beyond Secrecy for Secrecy's Sake: Toward An Expanded Vision Of The Fourth Amendment Privacy Province*, 36 Hastings L.J. 645, 663-66 (1985).

entries were the principal means of gaining access to concealed information about private lives. Restricting those entries was an effective way of protecting "the privacies of life," *Boyd v. United States*, 116 U.S. at 630–that is, of keeping the government from breaching vital interests in confidentiality. Today, secrecy can be defeated without physical intrusion. Science and technology have developed "unintrusive" means of breaching privacy and learning about the lives of "the people."[24] Fidelity to the intent, the purposes, and the values of the Framers requires that these new methods of breaching confidentiality be subject to the same restrictions as the only methods known to the Framers. While "the Framers . . . focused on the wrongs of [their] day," they "intended the Fourth Amendment to safeguard fundamental values which would far outlast the specific abuses which gave it birth." *United States v. Chadwick*, 433 U.S. 1, 9 (1977).

Consequently, in evaluating technological enhancements of surveillance capacities, an important question to ask is whether a new tool is an effective surrogate for the physical intrusions known to our ancestors. At a minimum, the Fourth Amendment is implicated whenever a device enables officials to breach protected interests in secrecy and confidentiality by learning concealed information that previously could have been learned only by means of physical entry into a home or other enclosed space.[25] Technology that

24. *See Ciraolo*, 476 U.S. at 218 (Powell, J., dissenting) ("Technological advances have enabled police to see people's activities and associations, and to hear their conversations, without being in physical proximity . . . [and] to conduct intrusive surveillance without any physical penetration of the walls of homes or other structures that citizens may believe shelters their privacy.").

25. The current doctrine would exclude a technique that could only uncover the "illegitimate" fact that contraband is concealed inside a

(continued...)

meets this standard must be constrained by the probable cause and warrant requirements. The inquiry proposed does not expand the scope of constitutional protection. In aim and effect, it is faithful to "the purpose of the Fourth Amendment"–"to preserve that degree of respect for privacy . . . that existed when the provision was adopted." *Dickerson*, 508 U.S. at 380 (Scalia, J., concurring). It is an approach that will "protect Fourth Amendment rights" against "gradual decay as technology advances." *Dow Chemical Co.*, 476 U.S. at 240 (Powell, J., concurring and dissenting).[26]

C. Because Thermal Imaging Enables The Authorities To Learn What Could Have Been Learned Only By Physical Intrusion When The Bill of Rights Was Adopted, It Is Subject To Constitutional Regulation

Thermal imagers indicate whether a home is radiating a relatively high or low amount of heat and whether some areas of a home are emitting more heat than others. Thus, they

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25. (...continued)
publicly-situated container. *See supra*, footnote 13. If the Court adheres to the view that that limitation is consistent with the Framers' intent, it could easily be incorporated into the proposed framework.

26. The Court's decisions are consistent with this approach to Fourth Amendment threshold questions raised by novel technological advances. *Compare Karo*, 468 U.S. at 715 (because physical entry of the home to verify the presence of a can would have triggered Fourth Amendment coverage the result must be the same where the government "employs an electronic device to obtain information that it could not have obtained by observation from outside the curtilage"), *with Knotts*, 460 U.S. at 285 (the employment of an electronic monitoring device was not governed by the Fourth Amendment because there was "no indication that [it] was used in any way to reveal information" about the inside of a cabin "or in any way that would not have been visible to the naked eye from outside the cabin").

enable the authorities to learn whether and where occupants are engaged in heat-generating indoor activities. By seeking warrants based on the results of thermal imaging, government officials acknowledge that they have learned significant information about the private lives of home occupants.

When the Fourth Amendment was adopted, the facts acquired by thermal imaging could have been learned only by a physical entry of the home. Consequently, thermal imaging provides the government with an effective substitute for "the chief evil against which the wording of the Fourth Amendment is directed." *Unites States v. United States District Court*, 407 U.S. 297, 313 (1972). The threat to home privacy is the same as it would be if a government operative who could sense heat were to enter the home and roam through rooms. Because human senses are incapable of precisely perceiving relative heat levels, the threat from thermal imaging may be even greater than that posed by physical entry.[27]

While "[c]rime, even in the privacy of one's own quarters, is . . . of grave concern to society, . . . [t]he right of officers to thrust themselves into a home is also a grave concern, not only to the individual but to a society which chooses to dwell in reasonable security and freedom from surveillance." *Johnson v. United States*, 333 U.S. 10, 14 (1948). The Fourth Amendment strikes a marvelous balance

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27. The fact that thermal imaging is not as destructive of home privacy as physical entry by a government agent who employs all of his senses is irrelevant. The history and text of the Fourth Amendment provide no basis for concluding that the Framers would have been unconcerned by an entry that revealed only limited confidential information about a dwelling's interior. The relevant precedents properly presume that the Framers intended to empower "the people" to preserve the secrecy of all legitimate information about their homes and lives. *See Arizona v. Hicks*, 480 U.S. 321 (1987); *United States v. Karo*, 468 U.S. 705 (1984).

between those two "grave concern[s]," protecting the security and privacy of "the people" until the government demonstrates countervailing interests. The issue in this case is not whether officials may employ tools afforded by technology to detect illegal activities occurring in homes. The issue here is whether the authorities are subject to Fourth Amendment supervision when they exploit a sophisticated technological device that functions as an effective surrogate for physical intrusion into the home and causes equivalent harm to fundamental freedoms. In a society that long ago made the decision "to dwell in reasonable security and freedom from surveillance," thermal imaging must be subject to constitutional oversight.

CONCLUSION

For the reasons stated above, the judgment of the United States Court of Appeals for the Ninth Circuit should be reversed.

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